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मानक

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“जानने का अधिकार, जीने का अधिकार”

Mazdoor Kisan Shakti Sangathan

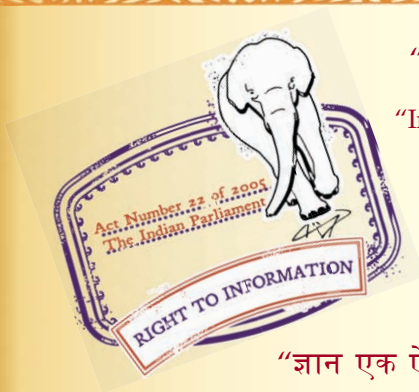
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“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 10242-3-5 (1990): Electrical Installations in Ships,
Part 3: Equipment, Section 5: Accumulator (Storage)
Batteries [ETD 20: Electrical Installation]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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भारतीय मानक
जहाजों में विद्युत संस्थापन
भाग 3 उपस्कर

अनुभाग 5 संचायक (भंडारण) बैटरियां — विशिष्ट

Indian Standard

ELECTRICAL INSTALLATIONS IN SHIPS

PART 3 EQUIPMENT

Section 5 Accumulator (Storage) Batteries — Specification

UDC 629.12.066 : 621.316.174 : 621.355.2

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BUREAU OF INDIAN STANDARDS
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NEW DELHI 110002

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Price Group 1

FOREWORD

This Indian Standard (Part 3/Sec 5) was adopted by the Bureau of Indian Standards on 19 April 1990, after the draft finalized by the Electrical Equipment and Installations in Ships Sectional Committee had been approved by the Electrotechnical Division Council.

This standard (Part 3/Sec 5) is one among the series of Indian Standards for electrical installations in sea-going ships, incorporating good practice and co-ordinating as far as possible existing rules. These standards form a code of practical interpretation and amplification of the requirements of the International Convention on Safety of Life at Sea, a guide for future regulations which may be prepared and a statement of practice for use by shipowners, shipbuilders and appropriate organizations.

This series of Indian Standards on electrical installations in ships consists of the following parts:

- Part 1 General,
- Part 2 System design,
- Part 3 Equipment,
- Part 4 Installation and test of completed installation, and
- Part 5 Special features.

In Part 3, different sections have been prepared to deal with individual equipment. Other sections under Part 3 dealing with individual equipment are as follows:

- Section 1 Generators and motors,
- Section 2 Switchgear and control gear assemblies,
- Section 3 Transformers for power and lighting, and
- Section 4 Semiconductor converters.

In the preparation of this standard, assistance has been taken from IEC Pub 92-305 (1980) 'Electrical installations in ships : Part 305 Accumulator (storage) batteries', published by International Electrotechnical Commission.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

ELECTRICAL INSTALLATIONS IN SHIPS

PART 3 EQUIPMENT

Section 5 Accumulator (Storage) Batteries — Specification

1 SCOPE

1.1 This standard (Part 3/Sec 5) is applicable to accumulator (storage) batteries which are installed permanently in position for use in ships.

1.1.1 This standard is not applicable to batteries of the portable type.

2 TYPES OF BATTERY

2.1 In general, accumulator batteries may be of lead-acid or of nickel-alkaline type, or any other proved type, due consideration is given to suitability for any specific application.

3 CONSTRUCTION AND ASSEMBLY

3.1 All plates shall be of rigid construction, and shall be designed to reduce to a minimum the shedding of active material.

3.2 The cells shall be so constructed as to prevent spilling of electrolyte due to an inclination of 45° in all directions from the normal.

3.3 The filling plugs shall be so constructed as to prevent spilling of electrolyte due to ship's movements, for example, rolling and pitching.

4 CRATES AND TRAYS

4.1 The cells shall be grouped in crates or trays of rigid construction and suitable material equipped with handles to facilitate handling. The number of cells in a crate or tray shall depend on the weight and on the space available for installation. The mass of crates or trays should preferably not exceed 100 kg.

4.1.1 This clause does not apply to cells the mass of which is such that grouping in crates or trays is impracticable.

5 NAMEPLATE

5.1 Each crate or tray shall be provided with a durable nameplate securely attached, bearing the manufacturer's name and address and type designation, bank voltage, the ampere-hour rating at a specific rate of discharge (preferably the one corresponding to the duty for the

specific application) and the specific gravity of the electrolyte (in the case of a lead acid battery, the specific gravity when the battery is fully charged).

6 CHARGING FACILITIES

6.1 For floating service or for any other conditions where the load is connected to the battery while it is on charge, the maximum battery voltage under any conditions of charge shall not exceed the safe value of any connected apparatus. The voltage characteristics of the generator or generator semiconductor convertor or semiconductor convertors, which shall operate in parallel with the battery, shall be suitable for each individual application. Where apparatus capable of operation at the maximum charging potential is not available, a voltage regulator or other means of voltage control shall be provided.

6.2 When a battery is floated on the line with resistor banks in series, all connected apparatus shall be capable of withstanding the line voltage to earth or to be disconnected. For systems above 55 V, it is recommended that a suitable warning plate be fitted stating:

**'DISCONNECT CHARGING SYSTEM
BEFORE WORKING ON ANY CIRCUIT
CONNECTED TO THE BATTERY'**

6.3 Where the voltage of an emergency-lighting battery is the same as that of the ship's dc supply, the battery may be arranged for charging in two equal sections, a charging resistor provided for each section.

Alternately, booster generator may provide charging voltage. With either method, the arrangement of automatic transfer switching shall be such that emergency supply is available whether the battery is on charge or not.

6.4 Except when a different charging rate is necessary and is specified for a particular application, the charging facilities shall be such that the completely discharged battery can be recharged to 80 percent capacity within a period of 10 h.

6.5 For batteries which normally stand idle for long periods, trickle charging to neutralize

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internal losses shall be provided where current shall be provided.
practicable.

An indication shall be provided to indicate a charging voltage being present at the charging unit.

6.6 Protection against reversal of the charging

6.7 Protection against over charging shall be provided for such batteries which cannot stand over-charge.

6.8 Battery status indicator shall preferably be provided to know the state.

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